

## REMARKS

Claims 14-26 were pending in the present Application.

Claims 14 and 19 have been amended. Support for the amendment to Claims 14 and 19 can be found at least in paragraphs [0036]-[0039] and Figure 8. It is believed that the amendments made herein may be properly entered at this time, i.e., after final rejection, because the amendments do not require a new search or raise new issues and reduce issues for appeal.. No new matter has been introduced by these amendments.

Reconsideration and allowance of the claims are respectfully requested in view of the following remarks.

### Claim Rejections Under 35 U.S.C. § 102(b)

A. Claims 14, and 16-18 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by Turner (US 5,939, 866). Applicants respectfully traverse this rejection.

To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

Claim 14 is directed to a material detection system, comprising a processing chamber; a flow path in fluid communication with the processing chamber, the flow path configured to contain a medium of interest transported to and from the processing chamber, *wherein the medium of interest contains a solid material to be detected*; an electromagnetic energy source coupled to the flow path for exciting said medium of interest; and an impedance measuring device for measuring an impedance value of an electromagnetic circuit, said electromagnetic circuit including said flow path therein, *wherein said impedance value corresponds to an amount of solid material within said medium of interest*.

Turner fails to disclose each and every element. In the Examiner's comments in "Response to Arguments" section of the present Office Action, it is stated that the "features upon which the applicant relies (i.e., the solid material being detected) are not recited in the rejected

claim(s)". It is respectfully requested that the Examiner carefully review the claim language since this language was present in the previously submitted claims. For convenience, Applicants have highlighted these claimed features above using bold and italic fonts. Turner fails to disclose a process for measuring the amount of solid material by changes in the impedance value. Rather, Turner discloses a method and system for monitoring the radio frequency power of plasma in (i.e., within) an electronic device fabrication reactor (i.e., "process chamber" as shown in Turner's Figs. 1,5). Turner directly monitors the electronic device reactor, i.e., the processing chamber and is configured to sense parameters such as voltage at the input of the plasma producing environment (see Turner, Col. 3, ll. 21-40). The method measures the full load that the radio frequency power sees by measuring the full load impedance of the plasma producing environment. This is markedly different from Applicants' claimed process wherein said impedance value corresponds to an amount of solid material within said medium of interest. Because of this, Turner fails to provide disclosure of the claimed material detection system, comprising, *inter alia*, a flow path in fluid communication with a processing chamber, the flow path configured to contain a medium of interest transported to and from the processing chamber, wherein the medium of interest contains a solid material to be detected. Nor are the claimed features inherent since Turner is clear in its process that the radio frequency power is monitored.

In view of the forgoing, the rejection is requested to be withdrawn.

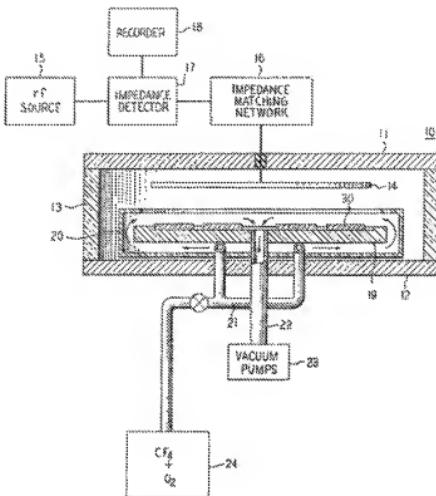
B. Claims 19, 22, 23, and 26 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by Tretola (US 4,207,137). Applicants respectfully traverse this rejection.

Claim 19 features an electromagnetic energy source configured to cause excitation of a gas having reactive species therein, wherein the excited gas may include a solid material; a mechanism for uniformly conveying the excited gas; and an impedance measuring device for measuring an impedance value of an electromagnetic circuit, said electromagnetic circuit including said excited gas therein, wherein said impedance value corresponds to an amount of solid material within said gas.

Like Turner above, Tretola also fails to disclose an impedance measuring device for measuring an impedance value of an electromagnetic circuit, said electromagnetic circuit

including said excited gas therein, wherein said impedance value corresponds to an amount of *solid material* within said gas as claimed. Turner's Figure 1 is shown below.

FIG. 1



The Office Action comments that Tretola allegedly discloses a downstream electromagnetic energy source as provided by reference numeral 14 for exciting an exhaust gas downstream of the workpiece and an impedance measuring device 17 for measuring an impedance value of an electromagnetic circuit. As shown in Tretola's Figure 1, it is noted that Tretola refers to reference numerals 14 and 19 as electrodes. The electrodes are spaced apart so as to provide a single electromagnetic source for generating plasma within the reaction chamber. As discussed throughout Tretola, the impedance detector as disclosed therein is used to monitor the impedance of the plasma. Nowhere is it disclosed nor is it inherent that the impedance detector is configured to correspond to the amount solid material within a gas as claimed by Applicants. Anticipation requires each and every element to be disclosed or inherent therein.

For at least these reasons, the rejection is requested to be withdrawn.

Claim Rejections Under 35 U.S.C. § 103(a)

A. Claim 15 stands rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Turner. Applicants respectfully traverse this rejection.

Turner is discussed above.

This rejection is respectfully traversed for the following reasons. The Office has failed to establish a *prima facie* case of obviousness. To establish *prima facie* obviousness of a claimed invention, three basic criteria must be met. *See* MPEP § 2143.

a) First, the prior art references must teach or suggest all of the claim limitations. See *id.* Turner, however, fails to teach or suggest a material detection system, comprising a processing chamber; a flow path in fluid communication with the processing chamber, the flow path configured to contain a medium of interest transported to and from the processing chamber, wherein the medium of interest contains a solid material to be detected; an electromagnetic energy source coupled to the flow path for exciting said medium of interest; and an impedance measuring device for measuring an impedance value of an electromagnetic circuit, said electromagnetic circuit including said flow path therein, wherein said impedance value corresponds to an amount of solid material within said medium of interest. Rather, as discussed above, Turner discloses and suggests a method and system for monitoring the radio frequency power of plasma within an electronic device fabrication reactor (i.e., process chamber). Measuring the full load impedance of the plasma seen by the radio frequency power (see Col.3, ll. 36-44), within a reactor with electrodes (see ‘cathode’ labeled in Fig 5), is not the same as having the impedance value configured to correspond to an amount of solid material within said medium of interest in a flow path in fluid connection to the process chamber. The measurement taught by Turner constrains it to apply to the plasma within the process chamber for the reasons cited as improvements to prior art in the first place (see Col. 2, ll. 49-63). There is no teaching or suggestion of a material detection system as claimed. Nor is there any disclosure of an electromagnetic energy source coupled to the flow path for exciting said medium of interest; and an impedance measuring device

for measuring an impedance value of an electromagnetic circuit, said electromagnetic circuit including said flow path as claimed.

b) Second, there must be some suggestion or motivation in the references themselves to modify the reference or to combine reference teachings. *See id.* Turner does not contain any suggestion or motivation to one of ordinary skill in the art to modify or combine the references. As noted above, Turner is generally directed to monitoring a plasma within an electronic device fabrication reactor by actively monitoring radio frequency power. To accomplish this, the impedance detector monitors the radio frequency power within the device; i.e., not a flow path. Applicants' claimed material detection system monitors comprises, *inter alia*, a flow path in fluid communication with the processing chamber, the flow path configured to contain a medium of interest transported to and from the processing chamber, wherein the medium of interest contains a solid material to be detected. An electromagnetic energy source is coupled to the flow path for exciting said medium of interest. This is markedly different from what is taught and suggested by Turner.

There is no motivation or suggestion to provide the claimed material detection system.

c) Third, there must be a reasonable expectation of success. *See id.* At the time of the patentee's invention, a person of ordinary skill in the art must have had a reasonable expectation of success in Turner to produce a material detection system comprising a processing chamber; a flow path in fluid communication with the processing chamber, the flow path configured to contain a medium of interest transported to and from the processing chamber, wherein the medium of interest contains a solid material to be detected; an electromagnetic energy source coupled to the flow path for exciting said medium of interest; and an impedance measuring device for measuring an impedance value of an electromagnetic circuit, said electromagnetic circuit including said flow path therein, wherein said impedance value corresponds to an amount of solid material within said medium of interest. The Examiner thus cannot base a determination of obviousness on what the skilled person in the art might try or find obvious to try. Rather, the proper test requires determining what the prior art would have led the skilled person to do, with a reasonable expectation of success. The skilled person would not relocate the system as provided

by Turner based on its intended purpose of monitoring radio frequency power so as to control the plasma *within* the process chamber.

The Applicants also respectfully submit that the Examiner, in arriving at this specific construction, has destroyed the intent of the references. In this regard, the courts have held that ‘[i]f the proposed modification would render the prior art invention being modified unsatisfactorily for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon* 733 F. 2d 900, 221 USPQ 1125 (Fed. Cir. 1984). The courts have also held that ‘[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious.’’’ *In re Ratti* 270 F. 2d 810, 123 USPQ 349 (CCPA 1959). Turner is concerned with measuring the RF power that goes to the process chamber to produce the plasma.

In view of the foregoing, the rejection is requested to be withdrawn.

B. Claims 20 and 21 stands rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Tretola as applied to claim 19, and further in view of Turner. Applicants respectfully traverse this rejection.

Turner and Tretola are discussed above.

For reasons discussed above, neither reference teaches or suggests the material detection system as claimed by Applicants. The references, individually or in combination, fail to teach or suggest a system comprising a processing chamber; a flow path in fluid communication with the processing chamber, the flow path configured to contain a medium of interest transported to and from the processing chamber, wherein the medium of interest contains a solid material to be detected; an electromagnetic energy source coupled to the flow path for exciting said medium of interest; and an impedance measuring device for measuring an impedance value of an electromagnetic circuit, said electromagnetic circuit including said flow path therein, wherein said impedance value corresponds to an amount of solid material within said medium of interest. Neither system provides any direction to one of skill in the art to detect solid material entrained

within a flow path.

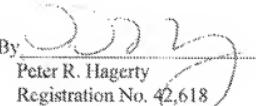
Accordingly, a prima facie case of obviousness has not been established and the rejection should be withdrawn.

It is believed that the foregoing remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance are requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

CANTOR COLBURN LLP

By   
Peter R. Hagerty  
Registration No. 42,618

Date: January 28, 2007  
CANTOR COLBURN LLP  
1180 Peachtree Street, Suite 2050  
Atlanta, GA 30004  
Telephone (404) 607-9991  
Facsimile (404) 607-9981  
Customer No.: 23413